

# “Focus REACH, Green Deal, normativa sulla limitazione dei diisocianati. Prodotti bio: realtà e nuovi sviluppi”

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working for you.

# SUMMARY

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- ❖ TRIMER STRUCTURE
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- ❖ GREEN DEAL GOAL

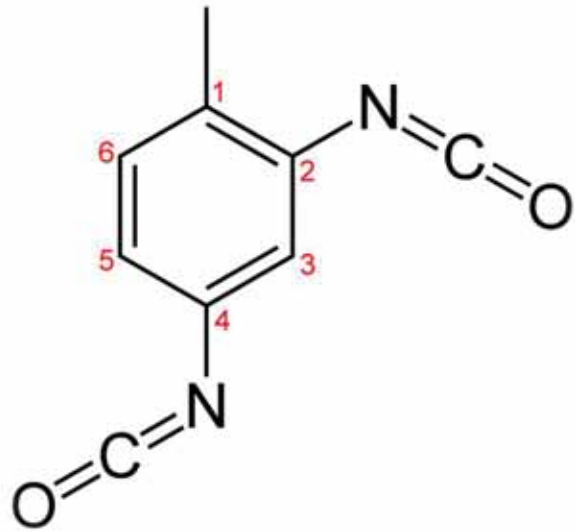


**2004**  
**SAN CIPRIANO PO**  
**1° BATCH OF POLURGREEN AD 01**

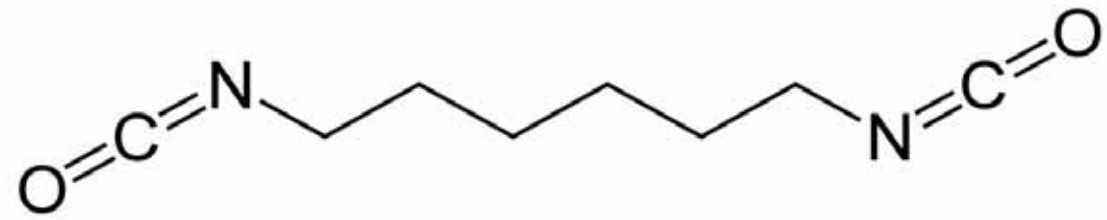
# Main Isocyanate Resin Families

TYPE OF ISOCYANATE	STANDARD PRODUCTS	POLURGREEN
HDI	< 0,15 %	< 0,1 %
TDI	< 0,5 %	< 0,1 %
MDI	5 – 90 %	< 0,1 %

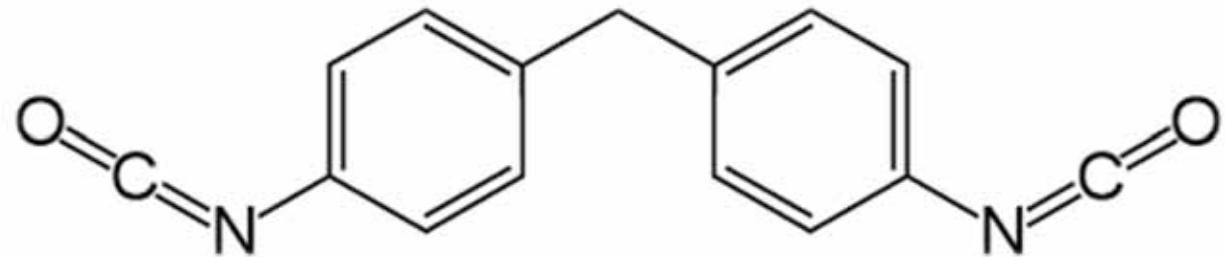
# Isocyanic Monomers



TDI – Toluene Di Isocyanate



HDI – Hexamethylen Di Isocyanate

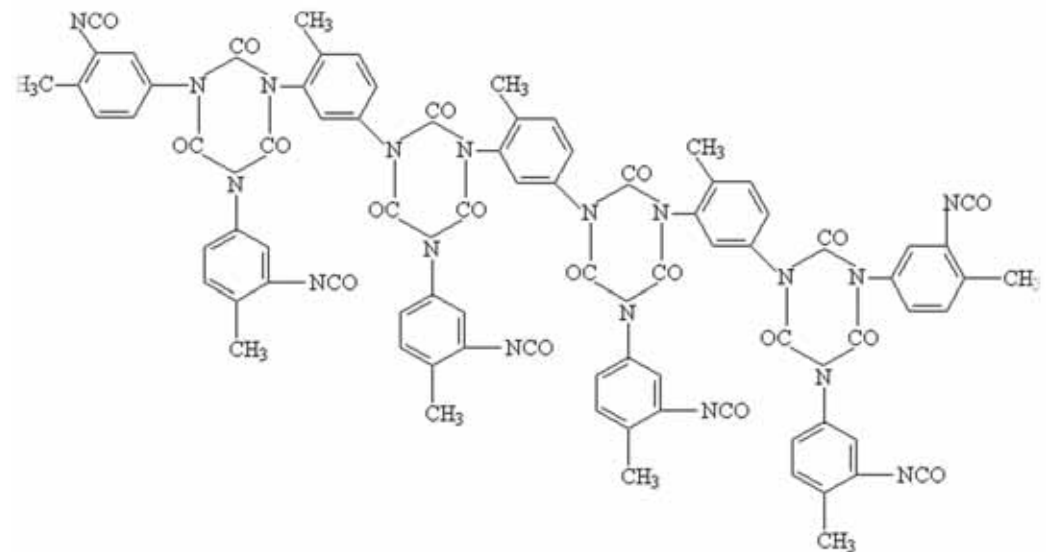
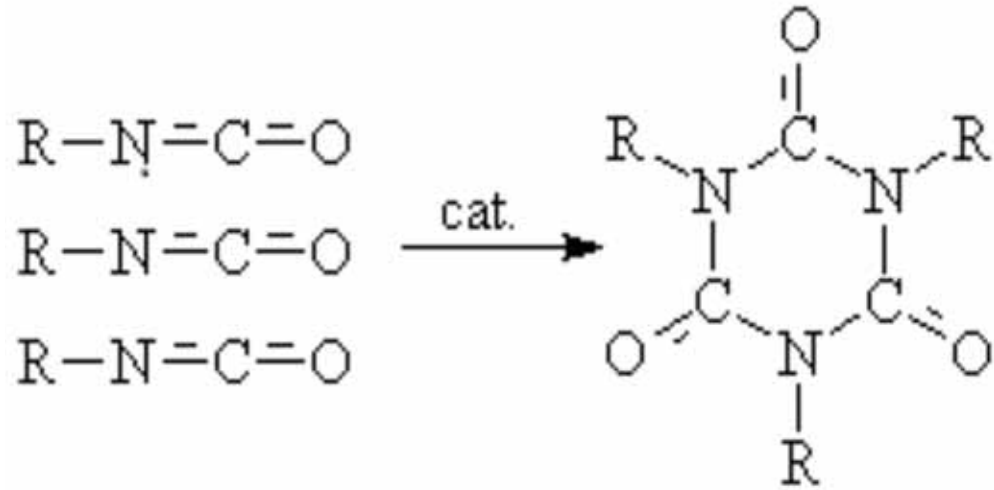


MDI – diphenyl Methylen Di Isocyanate

# Isocyanatic Adduct



# Isocyanic Trimer



# Aromatic Polyisocyanates Range

PRODUCT	% NV	Solvent	Type	Type Of Isocyanate	% Monomer	%NCO	Vx mPa*s @ 23°C
<b>POLURGREEN AD 01</b>	75	EA	Aromatic adduct	TDI	<0,1	12,5-13,5	1200– 300
<b>POLURGREEN AD 67 01</b>	67	MPA/X	Aromatic adduct	TDI	<0,1	11,0-12,0	800-2200
<b>POLURGREEN AD BA 01</b>	67	BA	Aromatic adduct	TDI	<0,1	11,5-12,1	400 - 800
<b>POLURGREEN 60T 01</b>	60	BA	Aromatic adduct	TDI	<0,1	9,5-9,9	1200 - 2000
<b>POLURGREEN SB 50 BA 01</b>	50	BA	Aromatic trimer	TDI	<0,1	7,6-8,4	300 - 900
<b>POLURGREEN IR 01</b>	50	BA	Aromatic trimer	TDI	<0,1	7,7-8,1	700 - 1400
<b>POLURGREEN IR 7050 BA 01</b>	50	BA	Aromatic trimer	TDI	<0,1	6,7-7,3	100 - 500
<b>POLURGREEN OK 01</b>	60	BA	Aromatic/Aliphatic trimer	TDI-HDI	<0,1	9,8-10,3	500 - 1100
<b>POLURGREEN OK HD 01</b>	60	BA	Aromatic/Aliphatic trimer	TDI - HDI	<0,1	9,5-10,5	200 - 800
<b>POLURGREEN FP 75 01</b>	75	EA	Aromatic adduct	TDI	<0,1	12,5-13,5	1200 - 3000



# Aromatic Polyisocyanates Applications

PRODUCT	MAIN APPLICATION
<b>POLURGREEN AD 01</b>	Polyurethane adduct for general purposes. Suitable for <b>2K varnishes and enamels</b> . It imparts good flexibility, fullness, brightness and solvent resistance.
<b>POLURGREEN AD 67 01</b>	Polyurethane adduct for general purposes. Suitable for <b>2K varnishes and enamels</b> . It imparts good flexibility, fullness, brightness and solvent resistance.
<b>POLURGREEN AD BA 01</b>	Polyurethane adduct for general purposes. Suitable for <b>2K varnishes and enamels</b> . It imparts good flexibility, fullness, brightness and solvent resistance.
<b>POLURGREEN 60T 01</b>	High versatile polyisocyanate used for the formulation of polyurethane <b>sealers and topcoats</b> . It gives the right balance between <u>fast drying and long pot-life</u> .
<b>POLURGREEN SB 50 BA 01</b>	Fast drying hardener with <u>extended pot life</u> , for 2K PU system with limited yellowing. Suitable for the formulation of <b>sealers and matt topcoats</b> . It gives hardness to the final coating.
<b>POLURGREEN IR 01</b>	Fast drying hardener for 2K PU system with limited yellowing. Suitable for the formulation of <b>sealers and matt topcoats</b> . It gives hardness to the final coating.
<b>POLURGREEN IR 7050 BA 01</b>	Fast drying hardener with <u>extended pot life</u> , for 2K PU system with limited yellowing. Suitable for the formulation of <b>sealers and topcoats (gloss and mat)</b> . It gives hardness to the final coating.
<b>POLURGREEN OK 01</b>	Aromatic-aliphatic hardener with <u>good yellowing resistance</u> . Suitable for <b>polishable varnishes and enamels</b> give to the final coating excellent hardness and good elasticity.
<b>POLURGREEN OK HD 01</b>	Aromatic-aliphatic hardener with good yellowing resistance, good compatibility with xylene and acrylic resins. Suitable for polishable varnishes and enamels.
<b>POLURGREEN FP 75 01</b>	Polyurethane adduct with FDA approval.

# Aliphatic Polyisocyanates Range

PRODUCT	% NV	Solvent	Type	Type Of Isocyanate	% Monomer	%NCO	Vx mPa*s @ 23°C
<b>POLURGREEN XP 1830 01</b>	80	BA	Aliphatic prepolymer	HDI	<0,1	13,2-14,2	300 - 1200
<b>POLURGREEN MT 75 01</b>	75	MPA/X	Aliphatic trimer	HDI	<0.1	16,0-17,0	50 - 200
<b>POLURGREEN MT 90 01</b>	90	BA/N	Aliphatic trimer	HDI	<0.1	19,1-20,5	400 - 700
<b>POLURGREEN MT 90 BA 01</b>	90	BA	Aliphatic trimer	HDI	<0.1	19,1-20,5	400 - 700
<b>POLURGREEN MT 100 HV 01</b>	100		Aliphatic trimer	HDI	<0.1	20,5-21,5	4000 - 6000
<b>POLURGREEN MT 100 01</b>	100		Aliphatic trimer	HDI	<0.1	21,5-22,5	1800 - 3300
<b>POLURGREEN MT 100 LV 01</b>	100		Aliphatic trimer	HDI	<0.1	22,0-23,0	900 - 1500
<b>POLURGREEN MT 100 LLV 01</b>	100		Aliphatic trimer	HDI	<0.1	22,0-24,0	550 - 850

# Aliphatic Polyisocyanate Applications

PRODUCT	MAIN APPLICATION
<b>POLURGREEN XP 1830 01</b>	Low monomer aliphatic polyisocyanate with high toughness and <u>compatibility</u> . Suitable for the formulation of no yellowing <b>2K PU coating and stoving enamel</b> .
<b>POLURGREEN MT 75 01</b>	Low monomer version of Polurene MT 75, aliphatic polyisocyanate with high toughness. Suitable for the formulation of no yellowing <b>2K PU coating and stoving enamel</b>
<b>POLURGREEN MT 90 01</b>	Low monomer version of Polurene MT 90, aliphatic trimer with high toughness. Suitable for the formulation of no yellowing <b>2K PU coating and stoving enamel</b> .
<b>POLURGREEN MT 90 BA 01</b>	Low monomer version of Polurene MT 90, aliphatic trimer with high toughness. Suitable for the formulation of no yellowing <b>2K PU coating and stoving enamel</b> .
<b>POLURGREEN MT 100 HV 01</b>	Aliphatic trimer with high toughness. Suitable for the formulation of no yellowing <b>2K PU coating and stoving enamel</b> .
<b>POLURGREEN MT 100 01</b>	Low monomer version of Polurene MT 100, aliphatic trimer with high toughness. Suitable for the formulation of no yellowing <b>2K PU coating and stoving enamel</b> .
<b>POLURGREEN MT 100 LV 01</b>	Low monomer version of Polurene MT 100 LV, <u>low viscosity</u> version of the aliphatic trimer. Suitable for the formulation of no yellowing <b>2K PU high solid coating and stoving enamel</b> .
<b>POLURGREEN MT 100 LLV 01</b>	Low monomer version of Polurene MT 100 LLV, <u>ultra low viscosity</u> version of the aliphatic trimer. Suitable for the formulation of no yellowing <b>2K high solid and solvent free PU coating</b> .

# Aromatic Prepolymers Range

PRODUCT	% NV	Solvent	Type	Type Of Isocyanate	% Monomer	%NCO	Vx mPa*s
POLURGREEN MC 6760 MPAX 01	60	MPA/X	Aromatic	TDI	<0,1	6,5-7,1	250 – 750 @ 23°C
POLURGREEN MC 5860 MPAX 01	60	MPA/X	Aromatic	TDI	<0,1	7,0-8,0	600 – 1600 @ 23°C
POLURGREEN PRP 350 01	100		Aromatic	TDI	<0,1	3,0 – 4,0	5000 – 9000 @ 23°C
POLURGREEN PRP 450 01	100		Aromatic	TDI	<0,1	4,0 – 5,0	5000 – 9000 @ 23°C
POLURGREEN PRP 750 01	100		Aromatic	TDI	<0,1	7,0 – 8,0	6000 - 12000 @ 40°C
POLURGREEN PRP 940 01	100		Aromatic	TDI	<0,1	8,9 – 9,7	4000 - 10000 @ 40°C
POLURGREEN PRP F 930 01	100		Aromatic	TDI	<0,1	8,8 – 9,7	10000 - 20000 @ 50°C
POLURGREEN PRP 5500 01	100		Aromatic	TDI	<0,1	2,0 – 3,0	3500 - 8500 @ 23°C

# Aromatic Prepolymers Applications

PRODUCT	MAIN APPLICATIONS
POLURGREEN MC 5860 MPAX 01	Moisture curing clear paints for wood and primers for concrete
POLURGREEN MC 5860 MPAX 01	Moisture curing clear paints for wood and primers for concrete
POLURGREEN PRP 350 01	Water proofing membrane
POLURGREEN PRP 450 01	Water proofing membrane and adhesive
POLURGREEN PRP 750 01	Adhesive and water proofing membrane
POLURGREEN PRP 940 01	Adhesive and primer
POLURGREEN PRP F 930 01	Spray polyurethane foam
POLURGREEN PRP 5500 01	2K Sealant and joint filler

# Aliphatic Prepolymers Range

PRODUCT	% NV	Solvent	Type	Type Of Isocyanate	% Monomer	%NCO	Vx mPa*s
POLURGREEN MC 1180 MPA 01	80	MPA	Aliphatic	HDI	<0,1	10,5 – 12,5	400 – 1000 @ 23°C
POLURGREEN PRP 4041 01	100		Aliphatic	HDI	<0,1	9,0 – 10,0	1500 - 3500 @ 23°C
POLURGREEN PRP 800 01	100		Aliphatic	HDI	<0,1	7,5 – 8,5	TIXO @ 23°C

# Aliphatic Prepolymers Applications

PRODUCT	MAIN APPLICATIONS
POLURGREEN MC 1180 MPA 01	Moisture curing clear paints for wood, and concrete with good light fastness. Binder for stone carpets
POLURGREEN PRP 4041 01	Electrical Insulating Materials – color stable elastomeric castings and membranes
POLURGREEN PRP 800 01	Electrical Insulating Materials – color stable elastomeric castings



# Hydrodispersible Polyisocyanates Range

PRODUCT	% NV	Solvent	Type	Type Of Isocyanate	% Monomer	%NCO	Vx mPa*s
HYDRORENE AW 1 01	100		Aliphatic	HDI	<0.1	16.0 – 18.0	2000 – 4000 @ 23°C
HYDRORENE AW 4 01	100		Aliphatic	HDI	<0.1	20.0 – 21.0	1000 – 3000 @ 23°C
HYDRORENE AW 5 01	100		Aliphatic	HDI	<0.1	15,5 – 16,5	5000 - 9000 @ 23°C
HYDRORENE AW 6 01	100		Aliphatic	HDI	<0.1	22.0 – 24.0	550 - 850 @ 23°C
HYDRORENE AW 65 PMA 01	65	PMA	Aliphatic	HDI	<0.1	10,0 – 11,0	50 - 200 @ 23°C
HYDRORENE AW 65 DPGDME 01	65	DPGDME	Aliphatic	HDI	<0.1	10,0 - 110	50 - 200 @ 23°C



# Hydrodispersible Polyisocyanates Applications

PRODUCT	MAIN APPLICATIONS
HYDRORENE AW 1 01	2K Water based primers and top coats
HYDRORENE AW 4 01	2K Water based primers and top coats for industrial and building application
HYDRORENE AW 5 01	2K Water based primers and top coats for wood
HYDRORENE AW 6 01	2K Water based primers and top coats for industrial and building application. Ready to use
HYDRORENE AW 65 PMA 01	2K Water based primers and top coats for wood. Fast solvent evaporation. Ready to use
HYDRORENE AW 65 DPGDME 01	2K Water based primers and top coats for wood. Non flammable and low odour. Ready to use

# Blocked Isocyanates Range

PRODUCT	% NV	Solvent	Type	Type Of Isocyanate	% Monomer	%NCO	Vx mPa*s
POLURGREEN LP 100 LV	100		Aromatic	TDI	<0,1	2.1	15000 - 25000 @ 23°C
POLURGREEN LP 100 LH	100		Aromatic	TDI	<0,1	2.1	20000 - 45000 @ 23°C
POLURGREEN LP 90 LH	90	10% DOA	Aromatic	TDI	<0,1	1,9	6000 - 14000 @ 23°C
POLURENE BK 5250 MPA EA	50	MPA EA	Aromatic	TDI	<0,1	6.0 – 6.5	<100 @ 23°C

# Blocked Isocyanates Applications

PRODUCT	MAIN APPLICATIONS
POLURGREEN LP 100 LV	2K adhesives and sealants
POLURGREEN LP 100 LH	2K adhesives and sealants
POLURGREEN PL 90 LH	2K adhesives and sealants
POLURENE BK 5250 MPA EA	Baking coatings and adhesives for PVC, fabrics, textile, and coil



# Isocyanic Prepolymers For Casting

PRODUCT	% NV	Chain extender type	Type Of Isocyanate	% Monomer	%NCO	Vx mPa*s
POLURCAST PET 80A - 01	100	Polyester	TDI	<0,1	2,7 - 3,1	2400 – 3000 @ 70°C
POLURCAST PET 85A - 01	100	Polyester	TDI	<0,1	3,3 – 3,7	2400 – 3000 @ 70°C
POLURCAST PET 90A - 01	100	Polyester	TDI	<0,1	3,7 – 4,1	1800 – 2100 @ 70°C
POLURCAST PET 95A - 01	100	Polyester	TDI	<0,1	5,2 – 5,6	1500 - 1700 @ 70°C
POLURCAST PE 80A - 01	100	Polyether	TDI	<0,1	2,7 – 3,1	700 - 900 @ 70°C
POLURCAST PE 80A - 01	100	Polyether	TDI	<0,1	4,3 – 4,7	250 - 450 @ 70°C
POLURCAST PE 95A - 01	100	Polyether	TDI	<0,1	5,8 – 6,2	250 - 450 @ 70°C
POLURCAST PE 75D - 01	100	Polyether	TDI	<0,1	9,0 – 9,8	300 - 500 @ 70°C

# Properties in Combination with MBOCA

PRODUCT	Hardness Shore	Tensile strength (Mpa)	Elongation at break (%)	100% Modulus	200% Modulus	Taber Test (H18) 1000 cycles (mg)	Taber Test (H22) 2000 cycles (mg)	Bshore Rebound (%)
POLURCAST PET 80A - 01	80 A	38	860	3,6	4,1	10,2	4,5	38
POLURCAST PET 85A - 01	85 A	40	535	5,3	8,6	3,2	2,8	38
POLURCAST PET 90A - 01	90 A	45	500	7,2	10,0	4,9	3,2	35
POLURCAST PET 95A - 01	95 A	48	460	12,1	14,6	3,8	2,6	28
POLURCAST PE 80A - 01	82 A	23	500	5,1	3,6	3,8	2,5	50
POLURCAST PE 90A - 01	90 A	34	425	8,5	12,6	2	2	53
POLURCAST PE 95A - 01	95 A	38	315	14,3	22,6	4,5	8	48
POLURCAST PE 75D - 01	75 D	51	220	44,8	50,4		2,5	55

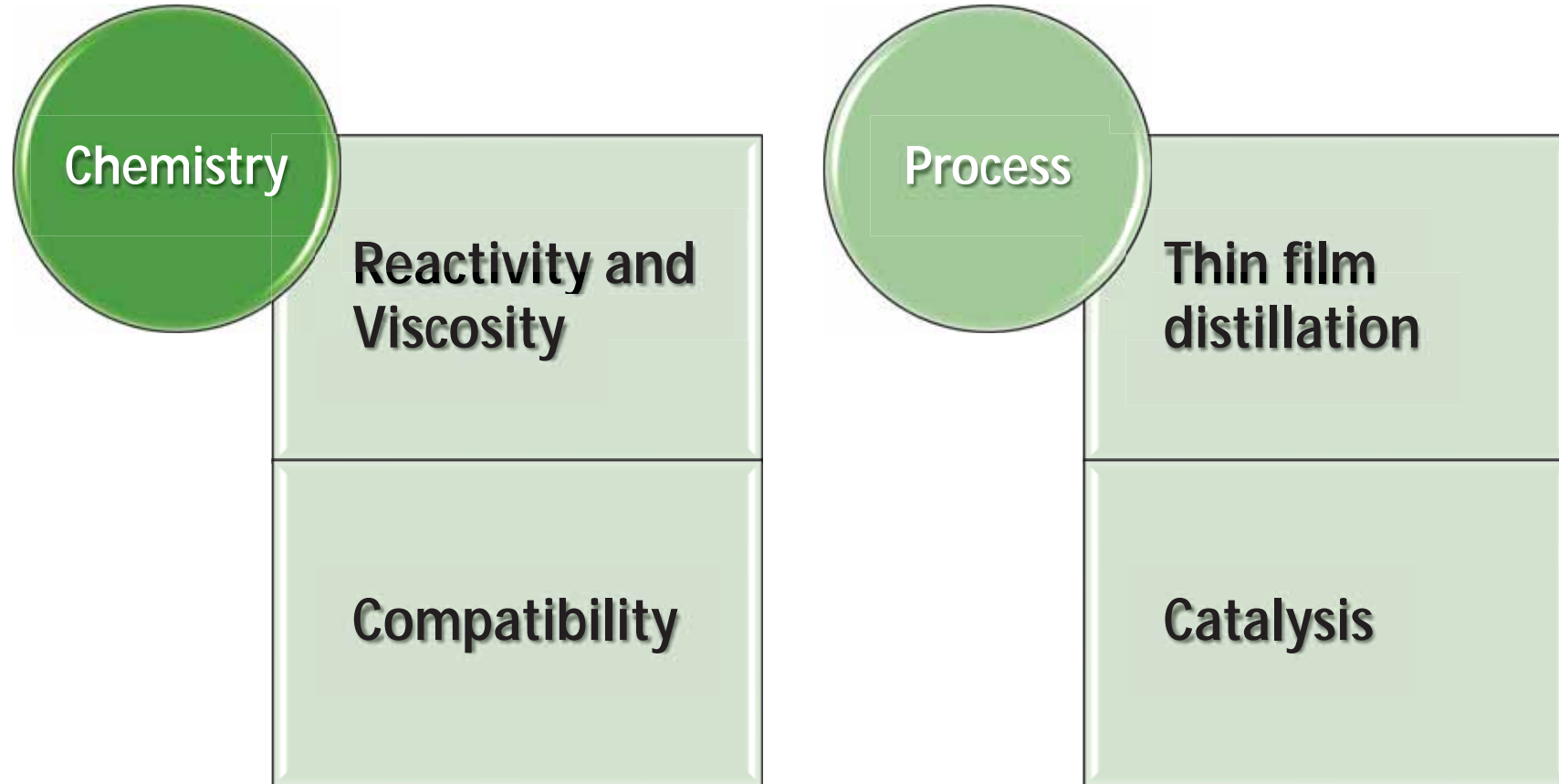
# Products for Printings & Inks

PRODUCT	% NV	Solvent	Type	Type Of Isocyanate	% Monomer	%NCO	Vx mPa*s
POLURGREEN FP 75 01 K	75	EA	Aromatic	TDI	<0.1	12,5 – 13,5	1200 – 3000 @ 23°C
POLURGREEN IR 51 01 K	50	EA	Aliphatic	TDI	<0.1	6,9 – 7,9	400 – 1000 @ 23°C
POLURGREEN OK 01 K	60	EA	Aromatic/Aliphatic	TDI/HDI	<0,1	9,5 – 10,5	350 – 850 @ 23°C

# Products for Footwear

PRODUCT	% NV	Solvent	Type	Type Of Isocyanate	% Monomer	%NCO	Vx mPa*s
UNI-DUR WB 7000 01	100		Aliphatic	HDI	<0.1	16.0 – 18.0	2000 – 4000 @ 23°C
UNI-DUR WB 8000 01	100		Aliphatic	HDI	<0.1	20.0 – 21.0	1000 – 3000 @ 23°C

# R&D Issues





# Industrials



# BB Polyisocyanate

## Polurgreen XP 2747 01

**67% Biobased  
Content**  
**Low Monomer Free  
<0,1%**

**Low Viscosity  
(1200mPa.s@23°C)**  
**High Functionality  
(roughly 3)**  
**High %NCO (> 23%)**  
**Low Colour (<100H)**

**Hardness  
Improvement**  
**High reactivity**  
**Best chemical  
resistance**

**Biomass waste  
feedstock**  
**No water and  
ground additional  
use**

# Green Deal Goal

**REACH  
Compliance  
(Band up  
ongoing)**

**Biobased  
Low Free  
Monomer**

**Superdurable  
Easy in use**



